UNIV-1100 — First Year Seminar: Scientific Computing Learning Community

Instructor: A. J. Meir
Peer Instructor: Lauren E. Gaines

Auburn University

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Operating Systems and Software

- Proprietary software
  - Protected by copyright, or trademark, owned, usage may be restricted by a license
- Free and Open Source software
  - Free as in beer
  - Free as in speech

Additional information:

- Free Software Foundation
  http://www.fsf.org
- GNU Project
  http://www.gnu.org
- Creative Commons
  http://creativecommons.org
- Electronic Frontier Foundation
  http://www.eff.org

OS and Software Choices

> **Guiding principle**
>
> Whenever possible I will use FOSS software and documentation that is governed by the CC license, or similar

- Operating System - Linux (Ubuntu derived Lubuntu)
- Virtual Machine - VirtualBox
- Software - Python, TeX/LaTeX and other FOSS packages

Virtual Machine

A virtual machine (VM) is a software implementation of a machine (i.e. a computer) that executes programs like a physical machine. Modern virtual machines are implemented with either software emulation or hardware virtualization.
http://en.wikipedia.org/wiki/Virtual_machine

VirtualBox

VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product.

VirtualBox allows an unmodified operating system with all of its installed software to run in a special environment, on top of your existing operating system. This environment, called a *virtual machine*, is created by the virtualization software by intercepting access to certain hardware components and certain features. The physical computer is then usually called the *host*, while the virtual machine is often called a *guest*. Most of the guest code runs unmodified, directly on the host computer, and the guest operating system *thinks* it's running on real machine.
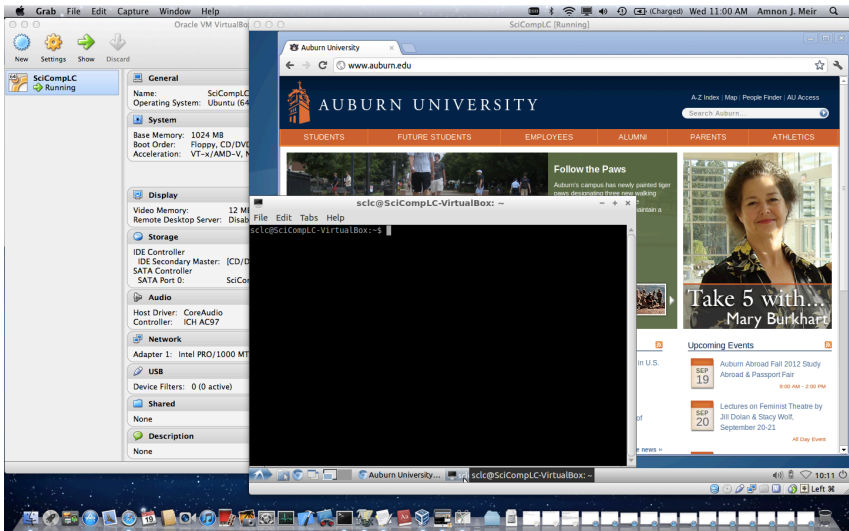http://www.virtualbox.org/wiki

VirtualBox

VirtualBox runs on Windows, Linux, Macintosh, and Solaris hosts and supports a large number of guest operating systems including but not limited to Windows (NT 4.0, 2000, XP, Server 2003, Vista, Windows 7), DOS/Windows 3.x, Linux (2.4 and 2.6), Solaris and OpenSolaris, OS/2, and OpenBSD.

VirtualBox
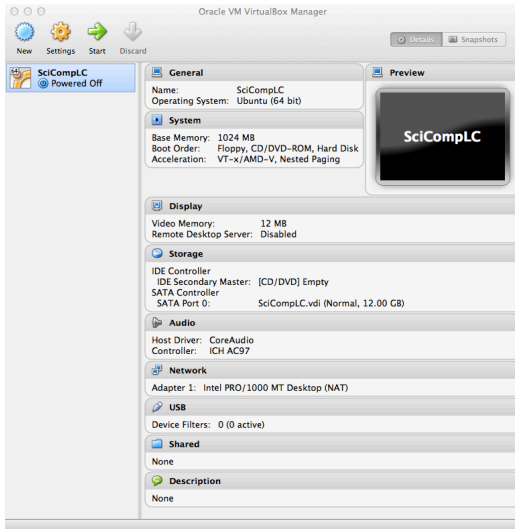
VirtualBox

Linux

Linux is a computer operating system which is based on free and open source software. Although many different varieties of Linux exist, all are Unix-like and based on the Linux kernel, an operating system kernel created in 1992 by Linus Torvalds.

Linux can be installed on a wide variety of computer hardware, ranging from mobile phones, tablet computers, routers and video game consoles, to desktop computers, mainframes and supercomputers. Linux is a leading server operating system, and runs most of the fastest supercomputers in the world.
http://en.wikipedia.org/wiki/Linux

Python I

Python is a remarkably powerful dynamic programming language that is used in a wide variety of application domains.
Some of its key distinguishing features include:

- very clear, readable syntax
- strong introspection capabilities
- intuitive object orientation
- natural expression of procedural code
- full modularity, supporting hierarchical packages
- exception-based error handling
- very high level dynamic data types
- extensive standard libraries and third party modules for virtually every task

Python II

- extensions and modules easily written in C, C++ (or Java for Jython, or .NET languages for IronPython)
- embeddable within applications as a scripting interface

http://www.python.org/about

Software Installation and Configuration

- VirtualBox - install VirtualBox and Oracle VM VirtualBox Extension Pack
  http://www.virtualbox.org/wiki/Downloads
- Create a VM image (virtual disk image; USB or hard drdive)
  http://www.auburn.edu/academic/classes/math/u1100/meir
- Configure VirtualBox
- Start virtual machine, create user, and use